Hygrophorus calophyllus

von Bonsdorff, Tea

2019

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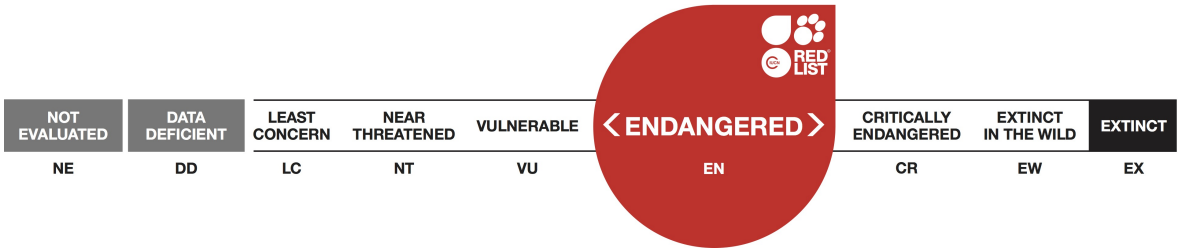
IUCN 2019: T147323011A159881386
Scope: Global
Language: English

Hygrophorus calophyllus

Amended version

Assessment by: von Bonsdorff, T.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Basidiomycota	Agaricomycetes	Agaricales	Hygrophoraceae

Taxon Name: *Hygrophorus calophyllus* P. Karst.

Taxonomic Source(s):

Index Fungorum Partnership. 2019. Index Fungorum. Available at: http://www.indexfungorum.org.

Assessment Information

Red List Category & Criteria: Endangered A2c+3c+4c ver 3.1

Year Published: 2019

Date Assessed: March 26, 2019

Justification:

Hygrophorus calophyllus is an easily recognizable, robust fungus with salmon-red coloured gills. In Europe, the species is a indicator species of old, calcareous conifer forests which have high conservation values and a rich fungal biodiversity. It has a sparse circumboreal distribution with less than 100 known localities. The total population size is estimated not to exceed 2,500 mature individuals. Due to forestry, the number of localities is suspected to have declined with more than 50% and continue to decline. Hence, *H. calophyllus* is assessed as Endangered (EN) under criterion A2c+3c+4c, due to population reduction of more 50% in 50 years (three generations), and under C1 (small population size and suspected continuing decline with under 2,500 mature individuals).

Previously Published Red List Assessments

2019 – Endangered (EN)
http://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T147323011A148001789.en

Geographic Range

Range Description:

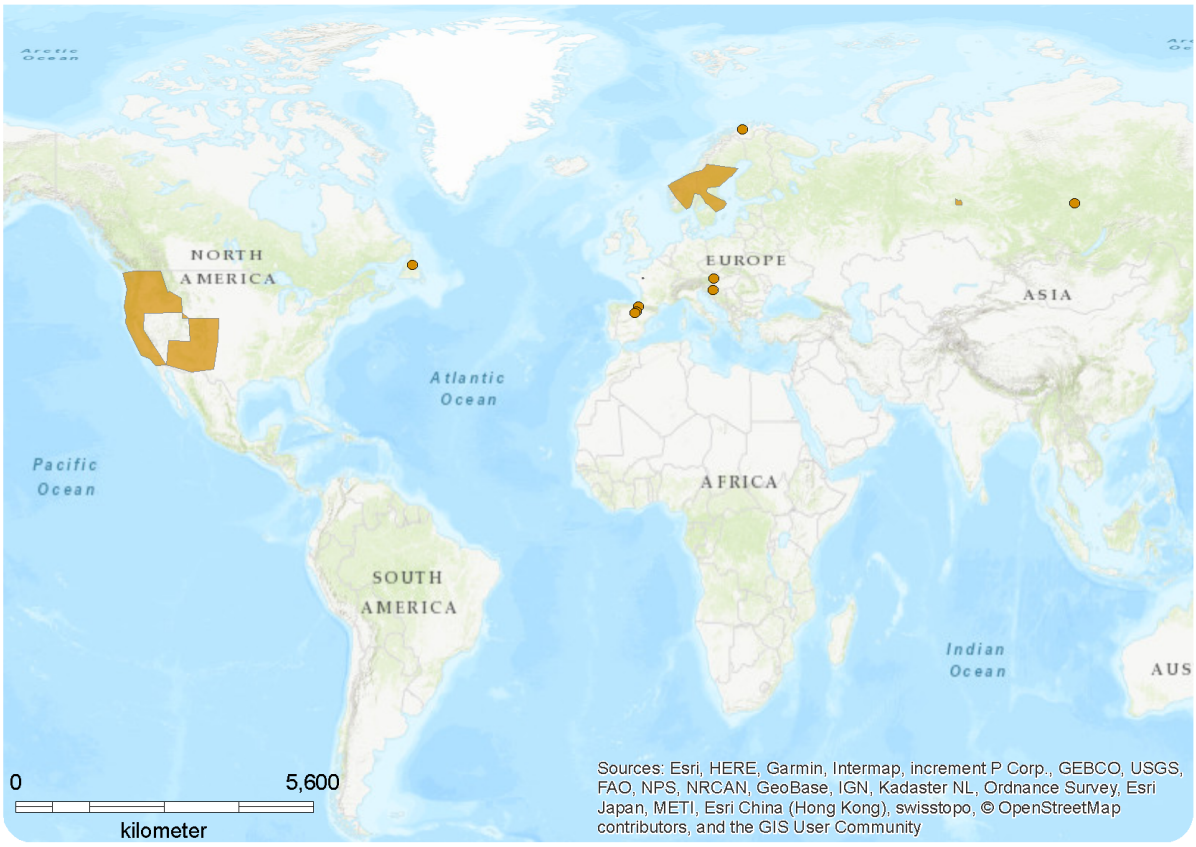
Hygrophorus calophyllus has a circumboreal distribution. It is very rare and has a fragmented occupancy. The core population in Europe is located in Sweden and Norway. It has a few records from central Europa and North America. Reported occurrences in Italy and Japan have not been confirmed.

Country Occurrence:

Native: Austria; Canada; Croatia; France; Germany; Norway; Russian Federation; Spain; Sweden; United States

Distribution Map

Hygrophorus calophyllus



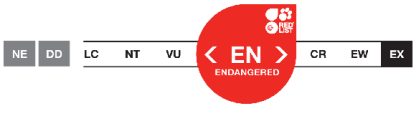
Range

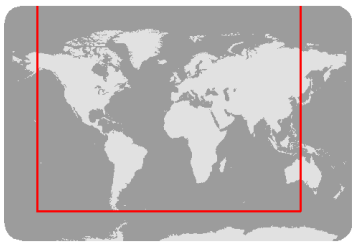
Extant (resident)

Extant (resident)

Compiled by:

IUCN





The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

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Population

Hygrophorus calophyllus is currently known from about 85 localities of which 50 are located Europe (predominantely in), and 35 localities in North America.

The total number of localities, including yet unrecorded sites, is suspected not to exceed 200, due requirement of particular habitat type. The total population size is estimated not to exceed 2,500 mature individuals. The species is very rare in throughout the boreal and only have a few records in the temperate zone. This species is suspected to have declined during the last 50 years in Europe, due to loss of habitat area and reduced habitat quality caused by forestry (logging) (cf. Kotiaho 2017, Svensson *et al.* 2019). Similar habitat decrease has taken place and is going on in North America.

The habitats of *H. calophyllus* are small in area and those are threatened in many countries in Northern Europe (e.g. Brandrud and Bendiksen 2018). The same trend has been reported from North America with similar population/habitat decline and is due e.g. continued loss of habitat, decline in old growth forest areas, and replacing fires are likely detrimental to this species (Siegel 2017).

The species is estimated to have decreased by more than 50% in three generations and the decline (50 years, Dahlberg and Mueller 2011) based on habitat-loss of old-growth forests on calcareous soils and continuing decline, but the number of localities is very low with *ca* 50 known localities in Europe (eg. Sweden 10-20; Norway 15-20; Russia 5, Croatia 1). USA with 35 (Siegel 2019). The species has been evaluated as threatened in Norway (EN), Sweden (EN) and Croatia (CR). It is reported as regionally extinct (RE) from Finland (von Bonsdorff *et al*. 2019) as last collected in 1889.
Current Population Trend: Decreasing

Habitat and Ecology **(see Appendix for additional information)**

Hygrophorus calophyllus forms ectomycorrhiza with Scots Pine (*Pinus sylvestris*) and Norway Spruce (*Picea abies*) in Europe and other Pinaceae in North America. The species grows in old conifer forests on calcareous soils (dry-mesic eutrophic herb-rich forests) in Europe (von Bonsdorff *et al*. 2019, Kytövuori *et al*. 2005, Larsson *et al*. 2010). This habitat type is identified to have a high conservation value, including a rich fungal biodiversity (von Bonsdorff *et al*. 2014, Bjørndalen 2003, Nitare 2011). This kind of habitat type is naturally very small in area and fragmented and it has been assessed as threatened (VU-EN) in Finland and in Norway (Kouki *et al*. 2018, von Bonsdorff *et al*. 2014, Artsdatabanken 2018). The habitat type has also been decreasing in area and habitat quality in the other Nordic Countries (e.g. Nitare 2011, Brandrud and Bendiksen 2018).

Systems: Terrestrial

Use and Trade

The species is not known to be used.

Threats **(see Appendix for additional information)**

Due to logging, old growth forests on calcareous soils is a threatened habitat with reduced area and a declining number forests (Kouki *et al*. 2005, Nitare 2011, von Bonsdorff *et al*. 2014). Old-growth forests

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has been logged for timber and to some extent transformed to fields.

Conservation Actions (see Appendix for additional information)

Old-growth conifer forests on calcareous soils should be protected, as they are hot spots for *Hygrophorus calophyllus* and many for other fungi.

Credits

Assessor(s): von Bonsdorff, T.

Reviewer(s): Dahlberg, A.

Contributor(s): Larsson, E. & Siegel, N.

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External Resources

For Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.1. Forest - Boreal	-	Suitable	-

Plant Growth Forms
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Plant Growth Forms
Fungus

Threats
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	-	-	-
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	-	-	-
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	-	-	-
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.4. Unintentional effects: (large scale) [harvest]	Ongoing	-	-	-
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.1. Nutrient loads	Ongoing	-	-	-

Conservation Actions Needed
(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection

Research Needed
(http://www.iucnredlist.org/technical-documents/classification-schemes)

http://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T147323011A159881386.en

Research Needed
1. Research -> 1.2. Population size, distribution & trends
2. Conservation Planning -> 2.2. Area-based Management Plan

Additional Data Fields

Population
Number of mature individuals: 2499
Habitats and Ecology
Generation Length (years): 50

Amended

Amended reason: Polygons added to the map to show the core range, such that the map now consists of points and polygons.

The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

The IUCN Red List Partners are: Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; and Zoological Society of London.